

Collaboration of teachers and effectiveness of schooling (Belgium, Flanders)

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In a former project, using data collected in 23 general, vocational and technical secondary schools in 1990 and 1991, we made an analysis of the school management as described by heads (N=23) and teachers (N=1,057) and the effectiveness of schooling, measured for Dutch and Mathematics achievement and the school well-being of pupils in the 1st form (N= 1,454) and the 6th form (N=1,116) in the beginning and at the end of the school year (Verhoeven e.a., 1992). The data were analyzed on the school and form level as well as on the individual level by using multi-level analysis (Proc Mixed of SAS) and variance analysis. One of the conclusions of this project was that collaboration among teachers (measured on the school level) had a positive influence on the achievement and well-being of the pupils.

In this new project we (J. Van Damme will collaborate) want to reconsider this hypothesis relying on a new set of data, i.e. the longitudinal data collected by Jan Van Damme (Leuven) since September 1990 in 91 secondary schools (490 forms with about 6,500 pupils) in Flanders (Belgium). The last year of data collection is the school year 1996-1997. The advantage of this procedure is that we can rely on a larger sample of schools, more pupils are involved, and mainly, we have the information about Dutch and Math achievement of the same pupils, and an index of well-being over a period of six years.

In this project we have three purposes:

- 1) we want to reconstruct the different school careers of pupils of technical and vocational schools;
- 2) we want to describe the differences and similarities between technical and vocational education as far as collaboration among teachers and effectiveness of schooling (achievement and school well-being of pupils) are concerned;
- and 3) we want to focus on the relationship between collaboration of teachers and the effectiveness of schooling in vocational and technical schools. The analysis will be done on the individual level, the class level, and the school level (multi level analysis).

1) Design of the project

To answer these questions we should rely on data collected on the individual, class, and school level concerning the collaboration of the teachers and the effectiveness of schooling of pupils. The evolution of the effectiveness of schooling is measured using tests for Dutch and mathematics and an index of well-being of pupils in several school years. The same principle should have been applied for measuring the collaboration of teachers. Financial reasons did not allow to repeat this measurement each year and to connect the teachers with a class (but we can rely on an index replacing this one). In principle these teachers' data may only be linked to the first year of observation of the pupils. In order to reconstruct the school career of the pupils every year, since 1990-1991, the same cohort of about 6,500 pupils was tested. In the 1st form and in the 6th form they also took an I.Q. test, and in the 1st form information was collected about the socio-economic situation of their families and the educational level of their parents (which enables control for intake characteristics). Also known are the sexe, age, track, and class of the pupils. These data allow to make an analysis on the individual, the class and the school level for each investigated school year.

On the class level information is available about the number and the sexe ratio of pupils, the track and all other characteristics which may be calculated on the basis of the individual data. On the school level we can rely on the same data, and additionally on information about the network (private and public), number of pupils, sexe ratio, number of teachers, training, age and experience of teachers.

As far as teachers are concerned, at the beginning of the project, data were collected about the opinion of teachers on several aspects of school policy. Some of the indicators are related to collaboration among teachers which will be used to construct an index of collaboration. The weakness of the design is that only data of one school year are available which cannot be linked with classes. These data are only applicable on the school level. In the 2nd, 4th, and 6th grade data were collected on the deliberation of Dutch and Mathematics teachers about didactics. Nevertheless, the items are not the same as those of the first year of the project.

2) Sample

1) 91 schools were sampled taking into account the tracks offered by the schools. Because of the different structure of the schools, some schools were split up in two parts to sample the teachers. The type of secondary schools (or parts of schools) involved in the survey are:

- schools only providing general education: 31
- autonomous first grade schools: 12
- multi-track schools (general, technical, and vocational): 25
- technical/ vocational schools: 42

2) Sampling of pupils

All pupils of the first year classes in each of the schools were sampled in 1990-1991. This cohort was tested in the beginning and at the end of the 1st form, at the end of the 2nd, the 4th, and the 6th form. Moreover, field workers have tried to trace the pupils who left the schools of the sample, which was successful as table 1 shows.

What is the sample of pupils on 1/10/1993:

Of the 6,421 pupils participating since 1990 the following number of pupils was found in:

Table 1. Number of pupils in the sample on 1/10/1993

grade	test group school	other school	unknown	totals
4 th	4,611	330	0	4,941
3 rd	988	174	0	1,162
2 nd	45	11	0	56
1 st	0	1	0	1
?	0	94	167	261
Total	5,644	610	167	6,421

Of the pupils who are still attending the test group schools, about 1,644 attend technical tracks, 1,333 vocational tracks, and 2,667 the general track. Tentative analysis has also shown that not all tracks are equally represented in the sample. There is a concentration of pupils in some tracks. Moreover, some tracks have a majority of boys, some a majority of girls.

3) The sample of the teachers: N = 1,577 teachers in 110 schools or parts of schools. Depending on the type of school 15 or 30 teachers were sampled in each school(part). In each school teachers of different subjects were sampled.

3) Data collection

1) Teachers

Teachers had to fill in a questionnaire in relation to school life. Afterwards 16 indexes were constructed, e.g. job satisfaction, order in classroom, personal relationship with pupils, differentiation of pupils, pupil oriented behavior, the quality of the functioning of the school as an organization, etc. In the last index about 9 items may be used to give a picture of the kind of collaboration among teachers in the school. This questionnaire is only once presented to the teachers.

In the second, fourth, and sixth year the Dutch and Mathematics teachers got a questionnaire about didactic practices in the class room. One of the indexes concerns deliberation among teachers about didactics and the pupils (8 items). This index gives an idea of some forms of collaboration. Here data of pupils on class level can be linked with the answers of the teachers.

2) Pupils

In the 1st grade in the beginning and at the end of the school year, at the end of the 2nd, the 4th, and the 6th year pupils of the test group schools were tested for Dutch and Maths. For each year tests were adapted to the curriculum. In the 4th, and the 6th year tests were constructed adapted to the different curricula of the pupils (4 levels for Dutch and for Mathematics). Also data were collected concerning the choice of course, and the well-being (104 items; 9 sub-scales, one of them is about the academic self concept of the pupils).

References

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